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Hang-Dony Kuan

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TEXAS INSTRUMENTS INCORPORATED

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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte HANG-DONY KUAN and YINGSHENG TUNG

Appeal 2009-005870
Application 10/804,374
Technology Center 2800

Decided: February 16, 2010

Before ADRIENE LEPIANE HANLON, CHARLES F. WARREN, and
TERRY J. OWENS, *Administrative Patent Judges*.

OWENS, *Administrative Patent Judge*.

DECISION ON APPEAL
STATEMENT OF THE CASE

The Appellants appeal under 35 U.S.C. § 134(a) from the Examiner's rejection of claims 6-8 and 12-14. Claims 1-5, 9, 15 and 16, which are all of the other pending claims, stand withdrawn from consideration by the Examiner. We have jurisdiction under 35 U.S.C. § 6(b).

The Invention

The Appellants claim a system and test board for testing a semiconductor device. Claims 6 and 12 are illustrative:

6. A system for testing a singulated semiconductor device (DUT) comprising:

a socket for receiving a DUT, the socket having pins with ends for making electrical contact with the DUT and opposing ends for making contact with a test board;

the test board adjoining the socket, the test board having pin receptacles for receiving the opposing ends of the pins; and

measuring means operably coupled to the test board pin receptacles for measuring electrical signals in the DUT.

12. A test board for use in association with semiconductor device automatic test equipment (ATE) and a socket, the socket having pins and adapted for receiving a device under test (DUT), the test board comprising:

a contact area for operably coupling a pin to the ATE;

a pin receptacle on the contact area for receiving a pin, for thereby making staunch electrical contact between the pin and contact point.

The References

Frederickson	5,955,888	Sep. 21, 1999
Hembree	6,400,169 B1	Jun. 4, 2002

The Rejections

Claims 6-8 and 12-14 stand rejected under 35 U.S.C. § 102(b) over Hembree and over Frederickson.

OPINION

We affirm the Examiner's rejections.

Rejection over Hembree

Issue

Have the Appellants shown reversible error in the Examiner's determination that Hembree discloses a test board having a pin receptacle for receiving a socket pin?

Findings of Fact

Hembree discloses a semiconductor component testing device comprising a socket (92) for receiving a device under test (DUT) (component 10), the socket (92) having pins (contacts 96) with ends (y-shaped segments 108) for making contact with the DUT (10) and opposing ends (104) for making contact with a test board (98), the test board (98) adjoining the socket (92) (Fig. 7B), the test board (98) having pin receptacles (106) for receiving the opposing ends (104) of the pins (96), and circuitry (100) (corresponding to the Appellants' measuring means or automatic test equipment) operably coupled to the test board pin receptacles (106) for measuring electrical signals in the DUT (10) (col. 3, ll. 12-14; col. 9, ll. 40-62; Fig. 7A, 7B).

Analysis

"Anticipation requires that every limitation of the claim in issue be disclosed, either expressly or under principles of inherency, in a single prior art reference." *Corning Glass Works v. Sumitomo Elec. U.S.A., Inc.*, 868 F.2d 1251, 1255-56 (Fed. Cir. 1989).

The Appellants argue (Br. 6):

U.S. Patent No. 6,400,169 does not show pin receptacles in the test board. 106 in U.S. Patent No. 6,400,169 does not disclose a pin receptacle. U.S. Patent No. 6,400,169, in Figure 7B, only shows a line going across the bottom of Figure 7B at 106. U.S. Patent No. 6,400,169 does not show, teach, or suggest a pin receptacle receiving the opposing end of a pin.

Hembree discloses that “contacts 96 include terminal 104 that electrically engage electrical receptacles 106 in the test board 98. The terminal segments 104 can be formed in a dense grid array such as a pin grid array (PGA)” (col. 9, ll. 54-58). Hence, Hembree discloses a pin receptacle (106) receiving the opposing end (104) of a pin (96).

Conclusion of Law

The Appellants have not shown reversible error in the Examiner’s determination that Hembree discloses a test board having a pin receptacle for receiving a socket pin.

Rejection over Frederickson

Issue

Have the Appellants shown reversible error in the Examiner’s determination that Frederickson discloses a test board having a pin receptacle for receiving a socket pin?

Findings of Fact

Frederickson discloses a semiconductor device testing device comprising a socket (contactor assembly 630) for receiving a DUT (ball grid array integrated circuit (BGA IC) 100), the socket (630) having pins (620) with ends (626) for making electrical contact with the DUT (100), and opposing ends (622) for making electrical contact with a test board (printed circuit board 610), the test board (610) adjoining the socket (630) (Fig. 6B),

the test board (610) having pin receptacles (test area vias 616) for receiving opposing ends (622) of the pins (620), and a device tester (corresponding to the Appellants' measuring means or automatic test equipment) operably coupled to the test board pin receptacles (616) for measuring electrical signals in the DUT (100) (col. 5, ll. 53-60; col. 6, ll. 11-16, 31-43; col. 8, l. 32, 64-67). "[T]he lower end of each pogo pin 620 is fixedly adhered to the lower surface 614 of PCB 610 by solder 618 or another conductive adhesive, or is press-fit into the PCB" (col. 6, ll. 36-39).

Analysis

The Appellants argue that "U.S. Patent No. 5,955,888 does not show pin receptacles in the test board. 618 in U.S. Patent No. 5,955,888 is not a pin receptacle, it is solder (column 6, line 38)" (Br. 6). The Appellants argue that "U.S. Patent No. 5,955,888 discloses a pogo pin permanently attached to a printed circuit board 610" (Br. 7).

The Appellants' claims do not require that the pins are removably received in the pin receptacles. Hence, the claims do not exclude Frederickson's solder (618). Regardless, Frederickson discloses that the barrel (622) of each pin (620) can be press-fit into a receptacle mounted on a conductive via (616) formed in a predetermined test area of the PCB (610) (col. 6, ll. 34-39).

The Appellants argue that "U.S. Patent No. 5,955,888 does not disclose a 'socket having pins with ends for making electrical contact with the DUT and opposing ends for making contact with a test board'" (Br. 6-7), and "does not disclose a 'test board having pin receptacles for receiving the opposing ends of the pins'" (Br. 7).

Frederickson's contactor assembly (630) is a socket having pins (620) with ends (626) for making electrical contact with the DUT (100) and opposing ends (622) for making contact with a test board (PCB 610) (col. 6, ll. 10-16, 31-39). The test board (PCB 610) has pin receptacles (616) for receiving the opposing ends (622) of the pins (620) (col. 6, ll. 34-39; Fig. 6B).

Conclusion of Law

The Appellants have not shown reversible error in the Examiner's determination that Frederickson discloses a test board having a pin receptacle for receiving a socket pin.

DECISION/ORDER

The rejections of claims 6-8 and 12-14 under 35 U.S.C. § 102(b) over Hembree and over Frederickson are affirmed.

It is ordered that the Examiner's decision is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a).

AFFIRMED

kmm

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